Honors Chemistry - Acids and Bases Problem Set

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1. In the reaction $HC_2H_3O_2$ (aq) + H_2O (l) $\rightarrow$ $C_2H_3O_2^-$(aq) + H_3O^+(aq), identify the acid, base, conjugate acid, and conjugate base.

2. Write a neutralization reaction between sodium hydroxide and hydrobromic acid and predict whether the salt produced is acidic, basic, or neutral.

3. If the pH of a solution is 2.37, what is the concentration of hydrogen ions?

4. What is the pOH of a solution with $[OH^-] = 2.3\times10^{-6}$?

5. If it takes 50. mL of 0.50 K KOH solution to completely neutralize 125 mL of sulfuric acid solution, what is the concentration of the H_2SO_4 solution?

6. Can I titrate a solution of unknown concentration with another solution of unknown concentration and get a meaningful answer? Explain your answer in a few sentences.

7. What is the molarity of a nitric acid solution if 43.33 mL of 0.1000 M KOH solution is needed to neutralize 20.00 mL of the acid?

8. Explain the difference between the end point and the equivalence point of a titration.

9. What is a neutralization reaction? What are the products of most neutralization reactions?

10. What is the range of the pH scale? Where do acids, bases, and neutral

solutions fall on the scale? How is the pOH scale different?

11. What is the definition of a Bronsted-Lowry acid? A Bronsted-Lowry base?

12. A weak acid disassociates 4.0%. What is the pH of a 0.50 M solution of the acid?

13. A 0.2 M solution of a weak acid is created. The K_a value is 2.3×10^{-9}. Calculate the $[H^+]$ and pH of the solution.